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PROGRESS REPORT

Period: 9 October 1961 - 3 November 1961

1. AR Research

As noted in our progress report for the period 4 September - 6 October, 1961 emphasis was being given to work on the spike in view of the actuator design change introduced late in September. During the period now being reported on, eighth scale model experiments yielded an AR spike design which, while not optimum, is almost as effective as earlier configurations in which a smaller actuator volume was involved. In addition, material (i.e., honeycomb) orientation was changed to conform to that required for fabrication.

Wave guide measurements combined with range measurements and extensive calculations were being pressed by part of the I.F.I. group during this period in order to provide a better understanding of the material problems involved in going from eighth scale AR embodiments to full scale. Some anomolies have appeared as a result of this work which will have to be resolved before it can be predicted with reasonable certainty that any given material in an operational AR configuration will perform in accordance with experimental range results.

In addition to the above work, attention was given to a re-examination of the fin design and, particularly, to the need for metallic trapezoids on the outside surface of the fin over the pivot box and to the effectiveness of iron treatment on both the fixed and movable portions of the fin. This line of experiment has not been completed and, to the extent that fin design and fabrication are involved, will be pursued further during November at a priority only commensurate with the importance attached to this problem by LAC. Thus far, it can be said that there are indications that iron treatment can obviate the need for the metal trapezoids and can also make it possible to make the fixed portion of the fin of metal. The combined iron treatments of both the fixed and movable portions of the fin thus far tried, however, leave much to be desired. These studies nevertheless serve to point up the importance of having quantities of iron materials available to permit their use on all of the areas of the full scale model which in experiments in the past have been demonstrated to be sensitive to this type of treatment.

Through I.F.I. suggestions, progress has been made in the development of equipment to permit 70 Mc study of full scale model sections. Although the equipment now appears to be stabilized, the first measurements made on the full scale barrel section did not yield the expected AR

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results. The measurement techniques used in the experiment are currently being reviewed in an attempt to ascertain whether the anomolous results should be attributed to the measurement rather than the AR treatment.

2. Simulation

The equipment for the simulation experiment has been assembled and is currently being wired. All work, including checkout, is about 80% complete and should be at 100% on or before November 15. The final package will comprise a rack about 18 inches wide, 20 inches deep and 27 inches high. Calculation of simulated tracks is going forward and will be followed by preparation of the necessary program tapes.

3. AR Facility:

The statistical status of the program as of 3 November 1961 stands as follows in which the various categories are defined as given in the last (September) Progress Report.

Category	Committed		Authorized	Delivered 11-3-61
Electronic Instruments	$16,863			90%
Antennas, Cabinets etc.	$15,783	$32,646	$ 39,180	24%
Microwave Components	$16,265			26%
Electronic Supplies	2,500			90%
Labor - 10-31-61	10,071	$28,836	$ 44,000	—
Model Stand	$ 7,800	$ 7,800	$ 10,000	90%
Site Rehibilitation	———	———	$ 22,000	—
		$69,282	$115,180	

The two Hewlett-Packard signal generators which were to be transferred from the original measurement program [redacted] are no longer available for the AR Facility due to reactivation of [redacted] program. [redacted] STAT STAT

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has one spare 616B signal generator which we intend to use. While we could get by, temporarily at least, with just one such signal generator, we are investigating alternative sources for a second generator.

We had planned to use a set of step attenuators which had been replaced, and therefore surplus, in the area facility. However, recent inquiry indicates this system has been cannibalized by EG&G so that a new step attenuator system will have to be procured at approximately $1400. This procurement will not involve an excess over estimates.

Our major procurement problem remains the delivery schedule on the final stage Traveling Wave Tubes, two of which are not presently promised before 24 November.

The paper work required to make it possible for REECO to accept a purchase order directly from I.F.I. for INS site rehabilitation (in accordance with security requirements) has been completed. Work at the site is expected to begin during the week of November 6.